



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/812,408 | 03/26/2004 | Toshiyuki Kamiya | 9319S-000745 | 1286 |
| 27572 | 7590 | 11/02/2005 | EXAMINER | |
| HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303 | | | DOAN, THERESA T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2814 | |

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,408

Applicant(s)

KAMIYA, TOSHIYUKI

Examiner

Theresa T. Doan

Art Unit

2814

[Handwritten signature]

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed 08/16/05 has being acknowledged and entered.
By this amendment claims 5-7 are cancelled, and claims 1-4 are pending in the application.

Drawings

2. The correction drawing was received on 08/16/05. This drawing is approved.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 3, the limitation of "the first length being greater than a diameter of a laser that is used to irradiate the first protection film", as recited in claim 1 and the limitation of "irradiating a portion of the first protection film with a laser having a diameter

that is less than the first length", as recited in claim 3, are not supported in the original disclosure.

Claims 2 and 4 are also rejected because they depend on the independent claims 1 and 3.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohhashi (U.S. Pat. 6,586,815) as previously cited.

Regarding claim 1, Ohhashi (figures 4F-4G) discloses a semiconductor device comprising: a fuse 12 including an upper layer wiring layer having a first length (column 10, lines 1-4); a first protection film 152 on the fuse 12 (column 10, lines 1-4); and a second protection film 153 on the first protection film 152 (see figure 4F below and column 10, lines 6-7), the second protection film 153 including an opening section 11 formed therein that exposes the first protection film 152 (see figure 4G below and column 10, lines 13-15); the opening section 11 exposing an entire portion of the first protection film 152 located directly above the fuse 12.

Furthermore, Ohhashi discloses that the fuse bodies 12 have a length can be less than or equal to diameter of laser (column 7, lines 14-20), but does not disclose the

Art Unit: 2814

length being greater than a diameter of a laser that is used to irradiate the first protection film. However, it has been held where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corporation of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have the first length of the fuse slightly greater than the diameter of the laser because the same effect of blowing off the fuse ^{would} ~~of~~ result.

FIG. 4F

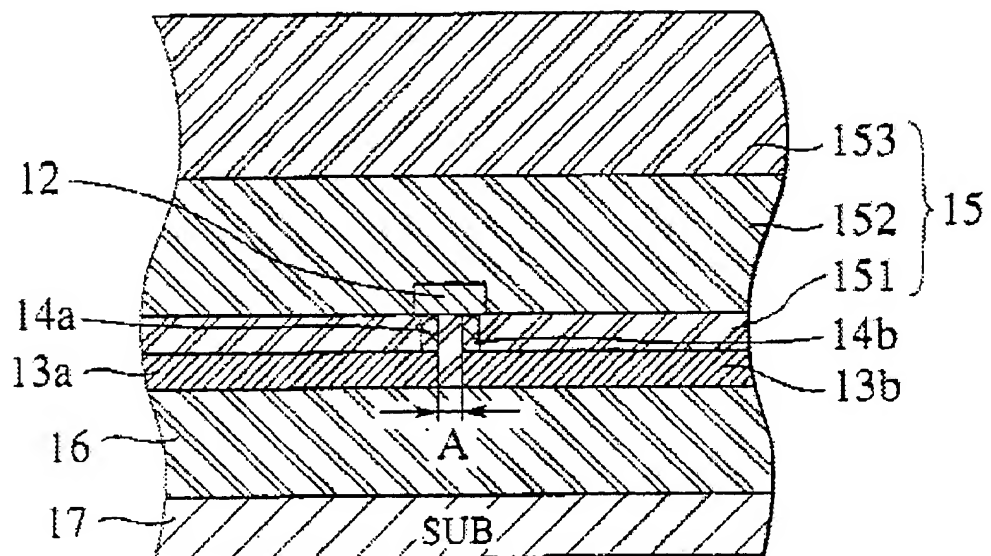
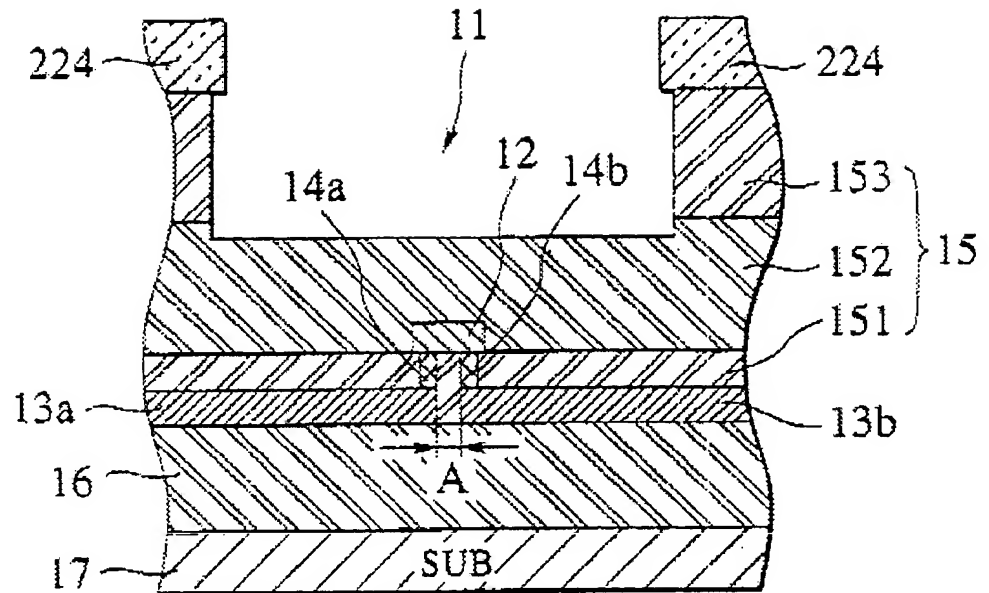
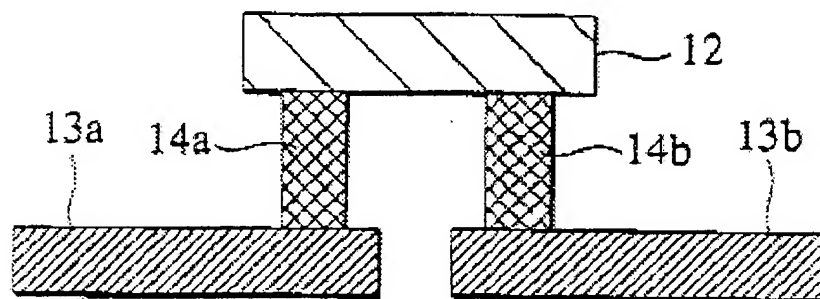


FIG.4G



Regarding claim 2, Ohhashi (figure 4G) further discloses that each of two end sections of the fuse 12 is connected to a lower layer wiring layer (13a and 13b) through a via hole (14a and 14b) (also see figure 5A below).

FIG.5A



Regarding claim 3, Ohhashi (figures 4F-4G) discloses a method for manufacturing a semiconductor device, comprising:

a step of forming a fuse 12 including of an upper layer wiring layer that has a first length on an upper surface of an interlayer dielectric layer 151 that is formed on a substrate 17 (see figure 4F and column 9, lines 44-46);

a step of forming a first protection film 152 on an upper surface of the interlayer dielectric layer 151 and the fuse 12 (column 10, lines 1-4); and

a step of forming a second protection film 153 on an upper surface of the first protection film 152 (see figure 4F and column 10, lines 6-7); and

a step of forming the opening section 11 in the second protection film 153, the opening section 11 that exposing an entire portion of the first protection film 152 located directly above the fuse 12 (see figure 4G and column 10, lines 13-15).

Furthermore, Ohhashi discloses that the fuse bodies 12 have a length can be less than or equal to diameter of laser (column 7, lines 14-20), but does not disclose a laser having a diameter that less than the first length. However, it has been held where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corporation of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have the first length of the fuse slightly greater than the diameter of the laser because the same effect of blowing off the fuse ^{would} ~~of~~ result.

Regarding claim 4, Ohhashi (figure 4G) further discloses the steps of forming via holes (14a and 14b) in the interlayer dielectric layer 151, and connecting two ends of

the fuse to a lower layer wiring layer (13a and 13b) through the via holes (14a and 14b) (also see figure 5A above).

Response to Arguments

Applicant argues that Ohhashi does not disclose that the fuse having a first length being greater than a diameter of a laser that is used to irradiate the first protection film as claimed.

This argument is not persuasive because the limitation of "the first length being greater than a diameter of a laser that is used to irradiate the first protection film", as recited in claim 1 and the limitation of "irradiating a portion of the first protection film with a laser having a diameter that is less than the first length", as recited in claim 3, are not supported in the original disclosure.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2814

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T. Doan whose telephone number is (571) 272-1704. The examiner can normally be reached on Monday to Friday from 7:00AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WAEL FAHMY can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

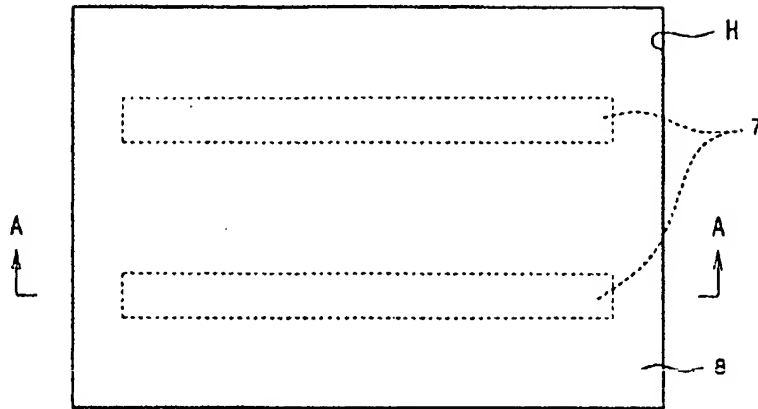
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Theresa Doan
October 28, 2005.


PHAT X. CAO
PRIMARY EXAMINER



FIG. 1 (a)



Approved
TD
10/25/05.

FIG. 1 (b)

